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THE CONSERVATION* OF THE GREAT MARINE VERTEBRATES: IMMINENT DESTRUCTION OF THE WEALTH OF THE SEAS

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THE rapidity with which our large wild animals are being destroyed at the present time is scarcely realized, to say nothing of the threatened introduction of a noiseless gun. Because this or that species is usually considered by itself, it is not generally noted that in the aggregate there is scarcely a single feral form large enough to attract the bullet of the hunter but is foredoomed to speedy extermination if a public sentiment mighty to save is not soon aroused; and such sentiment must cross and recross political boundaries, must be world-wide, to be wholly effective.

Much has been said about the preservation of various birds and land mammals; but with the exception of the seal, the passing of the great animals of the sea provokes little comment. Indeed, their protection or conservation is commonly deemed impossible or not worth the while, it being invariably overlooked that not a single great animal of the sea, unless of extreme rarity like some of the gigantic cuttelfishes, is without a large economic value, and thus always sooner or later the object of an exterminating hunt. Much less is the zoologic value considered—that intrinsic side which passes far beyond more obvious utility into the domain of the philosophic, and lends to sea and land a mighty charm.

Contrariwise, students of animal history and distribution, and more especially those who go back and study the fossil record as well, can not fail to observe with alarm the unremitting warfare against all the animal kind, that, extending far into the prehistoric period to the great land turtles and moas, has with the exploration of the remote places of the earth and the arming of every savage tribe with modern weapons, become a heedless *debacle*. It is therefore simply in the performance of a plain every-day duty that in recent annual mid-winter meetings of various scientific societies there has been brought forward for discussion, on a broad basis, the question of animal conservation on a large scale. We may especially cite the resolution passed unanimously by the American Society of Vertebrate Paleontologists at New Haven, as follows:

Resolved, That the American Society of Vertebrate Paleontologists will aid in any way practicable those measures legislative, international and local which will prevent the now imminent extermination of the great marine vertebrates, especially the cetaceans and manatees, seals, green and other turtles on the coasts of the United States, or on the high seas.

This resolution was also adopted as its own by the American Association for the Advancement of Science at its Chicago meeting, and very similar action has been taken by the New York Zoological Society looking to needed action by congress. Many evidences of a world-wide interest are at hand.

THE THOUSAND-YEAR HUNT OF THE WHALES

The first of the great cetaceans to be hunted, was the Biscayan whale, *Balaena glacialis*. Its capture was begun in the ninth century by the Basques and soon taken up by others. Following extermination in the Gaseigne Bay, the hunt was slowly pushed northward to Finland and Iceland, and along the western Atlantic; it being even possible that whalers visited the Newfoundland shores long previous to the discoveries of Columbus. The relentless warfare to which the Biscayan whale was subjected for hundreds of years culminated in the sixteenth century and only stopped short of total extinction through the extension of the fisheries to the far north and discovery of the greater value of the Greenland whale, *Balaena mysticetus*.

The capture of the latter began in 1612 in the open waters between Spitzbergen and Greenland, and soon extended to Davis Strait and Baffin Bay. After two hundred years of unceasing pursuit this whale was driven to the remote places of the Arctic Ocean, and is now so nearly extinct that its recovery in numbers is doubtful. It may be too late to save this form; although from 1669 to 1778 it yielded to 14,167 Dutch vessels 57,590 catches worth \$16,000,000 net. But this is only one of the many killings of the proverbial goose that laid the golden eggs, and a cruel enough one too. Scoresby says, in speaking of this timid whale of strictly arctic range, that it shows an affection for its young which "would do honor to the superior intelligence of human beings"; but being a trader as well as observer he adds that "the value of the prize . . . can not be sacrificed to the feelings of compassion!"

After the virtual extermination of these two more valuable species the merciless hunt was diverted to the much wilder finback whale, *Balaenoptera physalis*, now in turn with still other forms destined to extinction if restrictive measures are not soon taken. For in these days of steam, and electric light that robs the long arctic night of its terrors, the whale chase goes on very fast. The shot harpoon,¹ the

¹ Invented by Sven Foyn about 1870, by which time, owing to wildness and scarcity of the whales, the older methods of capture were no longer capable of returning a profit. Foyn was at first a sealer.

most extraordinary weapon ever used by man in his pursuit of helpless animals, is doing its deadly work at a rate that does not permit delay.

No effective measure has yet been taken; although man has actually made his first pause in the brutal butchery and reckless waste of the whale kind, begun a thousand years ago, and now nearing an end hastened in geometric proportion by modern invention.

The capture of the finback and other whales is indeed forbidden in the Norwegian fjords, but this is of little avail; for, unfortunately, the whales visiting the Scandinavian coast to calve and feed their young make a round into the far northern waters about the Bear Island and Spitzbergen, and are there slaughtered just as inevitably. When I was at the Bear Island whaling establishment early in July last I was informed that up to that time the season's catch already numbered forty-seven; and the evidence on every hand, the several thousand barrels of oil on the hillside, the skeleton-lined shore, the thousands of carrion-eating birds, and the trying-out works that sent up an odor that literally smelled to heaven as it floated away for miles over mountain, valley and snow field—all these told the story of short-sighted human greed better than records.

This reckless arctic hunt is now largely confined to the finback, to *Balaenoptera borealis*, to the gigantic blue whale, *Balaenoptera musculus*, and to *Megaptera longimana*. It is a bloody hunt, occurring when the females, which show throughout an extraordinary affection, are suckling their young.

The most recently attacked form is the bottle-nose, *Hyperoodon rostratus*; and just twenty-seven years have brought this superb gregarious animal to the verge of extinction; for although worth but a few hundred dollars each, this species is easy to catch. Unlike the fierce and wary "cachalot," its wondering curiosity and lack of fear makes it easy prey.

For the greater part, however, the whale butchery is, for a second time, being transferred to the Antarctic, where, after an intermission of fifty years, whales are again more plentiful, showing very conclusively the need of exact study of the habits of the whale and an international police patrol. So far as we are monetarily concerned, it may be stated that the whaling industry of the United States, north and south, from 1835 to the wane of the fisheries about 1872, yielded oil and bone worth \$272,000,000; this vast sum being the net from 19,943 voyages with a capture of 300,000 whales.

The total capture of all the species of whale mentioned above may well fall short of 1,000,000 individuals—certainly a limited number when we consider a hunt that has occupied the maritime nations of the globe for quite 1,000 years, and a number, moreover, that warns us how very liable to extinction are all enormous and highly specialized mam-

mals. Evidently the values destroyed in the unreasoning hunt must already be several times as great as the market price of the product secured, to say nothing of the future. It is apparent enough that even if we deny to animals the right to live that Professor Nathorst has so justly and so eloquently maintained they have, the reduction of our problem to the sordid standard demands immediate action. Certainly no one need be reminded that it has taken nature millions of years to evolve the whales, and that it is unlikely that the feat can be again duplicated on this planet.

The great destruction of the whales is, as we see, then, mainly modern; the first six or seven hundred years of hunting previous to the use of swift launches were not so noticeably destructive. Perhaps the manner in which large animal species living under strenuous conditions and necessarily breeding slowly are so swiftly destroyed in modern times can be understood better in the case of a land form like the musk ox, to which I may briefly advert. Half sheep, half ox, this curiously interesting animal, yielding in quantity a strong under wool with a texture as fine as silk, is confined solely to the treeless arctic wastes of North America and the islands to the north; its habitat originally extended from Hudson Bay westerly to the Mackenzie River, and all through Baffin Land, and Ellesmere Land to northernmost Greenland. Though the musk ox, despite this wide range, is now becoming exceedingly scarce. Cut off by the white hunter everywhere to the south, the Eskimo of the far north, always hard on the musk ox, have at last obtained guns and are now killing the northern remnants of the original herd. Thus is this hapless denizen of the most inhospitable regions of the earth being ground between the upper and nether millstone.

As such a process must have a speedy end, it is greatly to be hoped that the musk ox can be introduced into Alaska, and that the Canadian and United States governments may soon take this subject up conjointly. It is most unfortunate that the recent Swedish attempt to introduce musk oxen into Jämtland, southern Lapland, has failed owing to local parasitic enemies.

DESTRUCTION OF OUR SEA TURTLES

Taking up another group of great sea animals; no chapter in the story of destruction is quite so harrowing as that of the sea turtles of the southern coasts and islands of the United States—the more so because it is not only the original supply that has been cut off, but because there is not the least doubt but that the turtles can with slight expense be increased vastly beyond any numbers ever observed in purely natural environments.

The problem of conserving and increasing the plant-eating green turtle and the animal-eating hawksbill, which yields the tortoise shell

of commerce, should be definitely taken up, and solved. The original numbers of these forms in the natural state were always limited by the helplessness of the young when first hatched. With a shell at first very soft, great numbers are eaten by the shore birds of prey before even reaching the comparative safety of the water after floundering out of the sand where the eggs were laid. And once in the water the young are still for a time the prey of sharks, so that of the hundred or more that emerge from a single hatching a very few survive these early dangers to reach adult size. This helplessness may, however, be readily tided over by only the slightest protection, as the young grow very rapidly, and the shell soon thickens. If all shores where the green and hawksbill turtles lay their eggs were guarded by law enforced, and the young safely piloted to the water and perhaps fed for a few times only, it is evident, remembering the unvarying habit of the females to return to the same shores to lay their eggs, that the great pasturing and foraging grounds of our southern waters could be made to teem with these turtles. Audubon gives a vivid account of the Florida "turtlers" and the abundance of the turtles in his day; though these original numbers can doubtless be increased twentyfold.

Yet it has come to pass that the United States Bureau of Fisheries has not during several years of effort been able to secure any eggs of the green turtle whatever on our shores. Nor will it be otherwise with the less palatable loggerhead in a very few years, if as at present, even the employees of the Coast Service, part of whose duties it should certainly be to protect these animals, continue as now to be the chief agents of their destruction. Even on the Dry Tortugas within shadow of the Marine Laboratory of the Carnegie Institution the lighthouse keeper whiles away the night searching up and down the long white sandy beach for turtles; and save in a fog, every time a female turtle flounders helplessly on to the beach to lay her eggs our friend of the lighthouse signals with a warning horn to the "beach combers" and "conchs" who rush up and despatch the egg-bearing female. These "conchs," are indeed an evolving type of very hungry beachers who, now that game is scarce, "*close*" on everything from a wrecked schooner to a stranded turtle or whale.

PROTECTION OF ALL THE GREAT MARINE VERTEBRATES IS FEASIBLE

Certainly the "beacher," the "conch" and the "sea wolf" are as interesting as the animals they destroy, and within certain very specific limits may deserve perpetuation! Meantime, for the sake of the preservation of both, as well as the superior rights of those dwelling inland—the greater number interested in the question of the eminent domain of the sea—it is needed to quickly demonstrate the fact that the world will not tolerate needless slaughter of its anciently evolved

animals, least of all when this incurs values *incalculably* greater than those represented by the seals alone.

All phases of this question which can be handled locally, and such are the more urgent phases, should be so handled by the proper bureaus, already in existence, backed by unmistakably knowing public sentiment. Sequentially the system of international safeguarding should be extended and perfected—the same system that has been already invoked for the seals, by reason of the fact that they yield that woman's garment—the seal-skin cloak. Only when all the sea animals are considered will this system ever be effective in the case of any single species; and somewhat setting aside altruism, it does seem strange that the immense values of the whales and turtles should have been so persistently overlooked. On the other hand, a very great altruistic value is also involved. For all international movements leading to the reasonable use of naval equipment in patrolling all the seas for the sake of common and world-wide interests and sympathies—those causes at once humane and wealth-conserving, must thence bless.

It is, then, we must emphatically insist, neither Utopian nor impractical to attempt and speedily carry out the measures required for the preservation not only of land animals, but of all our great animals of the sea. The only element of doubt is whether the volume of sentiment can soon enough make itself felt—in short, whether the race has reached the required culture stage in time. Science has laid low the fallacious theory of fabulous gold dissolved in the waters of the seas, and we no longer heed this phantom of wealth which has deluded credulous minds quite since the days of alchemy. Nevertheless, this old belief may yet find a certain large measure of prophetic fulfillment if man can overcome his habits of wanton destruction before our great marine animals are extinct and the possibility of their preservation on this planet gone forever.

To be practical, every zoological text-book should have its chapter on the conservation of the animals of the land and sea. None should be forgotten, as many must inevitably be if the subject of conservation is not taken up in its broadest phases and based on first principles in order that specific applications may be both general and intelligent. And such teaching and applications, at once interesting, useful and elevating, should make their way into every district school. It may well be doubted if the human kind will ever be merciful to itself without being first merciful to the beast kind. For use and domestication do not constitute cruelty, since in natural environments the end of the individual is always violent—that is the weak are captured by the hunting animals, and the lion starves when no longer able to hunt. Conversely, to exterminate the forms of the sea and land is repulsive. What a degrading, miserable story is that of the hunt of the sea otter.

